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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/795,983	KIM ET AL.	
	Examiner	Art Unit	
	WEI-PO KAO	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

1. The examiner has acknowledged the amendment made to the claims.

Response to Arguments

2. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

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3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/28/2009 has been entered.

Claim Rejection - 35 USC § 103

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 3, 4, 6, 7, 8, 15, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre).

Regarding Claim 1, Davies et al teach that **a switching control method for controlling traffic flow of an Ethernet frame** (see Abstract) **comprising the steps of: receiving an Ethernet frame containing predetermined priority information based on a class of service (CoS) from a source node** (see [0003] [0018] [0026-0027] [0031] i.e. although Davies et al do not specifically discuss a set of CoS associated with the eight priority levels, with 802.1Q, the priority levels are often associated with a set of CoS or as the result of a set of CoS, namely a priority level represents a class of service as suggested in [0055] Line 6-7)**; buffering the received Ethernet frame in a data buffer classified by the CoS** (see Figures 1-4, [0003] [0026-0027] [0045])**; comparing a size of data currently buffered in the data buffer with a**

predetermined threshold value (see Figure 4, [0027] [0052-0053]); **when the size of data currently buffered in the data buffer is equal to or larger than the threshold value** (see [0002] [0010] [0052-0053]), **generating a PAUSE frame; and transmitting the PAUSE frame to the source node** (see [0010] [0019] [0027] [0031] [0035]). However, Davis does not specifically teach that **priority information is based on a type of traffic; generating a PAUSE frame containing a value of the CoS.** Kloth from the same field of endeavor teaches that **priority information is based on a type of traffic** (see Abstract, Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. column 1 lines 45-67 and column 4 lines 40-67 indicates priority information is based on a type of traffic/service)**; generating a PAUSE frame containing a value of the CoS** (see Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. figure 1B element 24, column 1 lines 37-44). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Davis' flow control method with Kloth' flow control mechanism by implementing the priority information in the PAUSE frame. The motivation would have been that a QoS policy controlled by a network system administrator is needed together with a mechanism for applying it at the full data rate of the data communications network (see Kloth, column 2 lines 49-52).

Still regarding Claim 1, Davies and Kloth teach all the limitations in claim 1 except that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS.** Lemyre from the same field of endeavor teaches that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS** (see Abstract, Column 4 Lines 44-52, Column 8 Lines 12-17 39-44, Column 9 Lines 1-25, Column 11 Lines 14-30, Column 12 Lines

4-6 e.g. each buffer partition is allocated based on a particular CoS). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the dynamic buffer allocation mechanism from Lemyre's invention to Davies' invention. The motivation would have been that it is desired to achieve a more efficient allocation whenever a buffer is not full (see Lemyre, column 4 lines 24-26).

Regarding Claim 2, Davies further teaches that **the switching control method, wherein the predetermined threshold value is necessary for determining a traffic congestion state** (see Abstract, Paragraph [0027] [0052-0053]).

Regarding Claim 3, Davies further teaches that **the switching control method, further comprising the steps of: when a state of the data buffer is the traffic congestion state as a result of the comparison using the threshold value, determining whether or not a spare space remains in the data buffer** (see Abstract, [017] [0027] [0052-0053]); **and if a spare space remains in the data buffer as a result of the determination, storing the received Ethernet frame in the data buffer according to the priority information** (see [0002-0003]).

Regarding Claim 4, Davies further teaches that **the switching control method, further comprising the steps of: if a spare space does not remain in the data buffer as a result of the determination, discarding the received Ethernet frame** (see [0002]).

Regarding Claim 6, Davies further teaches that **the switching control method, wherein the**

PAUSE frame further includes information of a predetermined pause time for which traffic transmission of a corresponding CoS is stopped (see Paragraph [0002] [0054]).

Regarding Claim 7, Davies further teaches that **the switching control method, wherein the source node receiving the PAUSE frame stops transmission of an Ethernet frame having a priority of a corresponding CoS for a predetermined time** (see Paragraph [0026-0027] [0031-0035]).

Regarding Claim 8, Davies teaches that **the switching control method, wherein information of the CoS is included in header information of the Ethernet frame** (see [0003]). However, Davies does not teach that **information of the CoS is included in the PAUSE frame.** Kloth from the same field of endeavor teaches that **information of the CoS is included in the PAUSE frame and header information of the Ethernet frame** (see Figure 1B). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Davis' flow control method with Kloth' flow control mechanism by implementing the priority information in the PAUSE frame. The motivation would have been that a QoS policy controlled by a network system administrator is needed together with a mechanism for applying it at the full data rate of the data communications network (see Kloth, column 2 lines 49-52).

Regarding Claim 15, Davies teaches that **a switching control method for controlling traffic flow of an Ethernet frame which is received from at least one source node and is transmitted to at least one destination node** (see Abstract), **wherein a PAUSE frame had**

been transmitted to the at least one source node, the PAUSE frame containing information of a pause time for which traffic transmission of a corresponding CoS is stopped, the method (see [0002-0003] [0018] [0026-0027] [0031-0036] [0055] [0057]) **comprising the steps of: allowing a predetermined network unit controlling the traffic flow to start an internal timer and to determine whether the pause time has expired** (see [0052] i.e. in order for the PAUSE frame receiving end stop the traffic, the device must have a timer/clock to stop the traffic according to the pausing time indicated in the PAUSE frame)**; if the pause time has expired, comparing a size of data currently buffered in a data buffer based on the class of service (CoS) with a predetermined threshold value** (see [0002] [0052-0054])**; when the size of data currently buffered in the data buffer is equal to or larger than the threshold value, re-generating a PAUSE frame containing information of the pause time; and transmitting the regenerated PAUSE frame to the source node** (see [0002])**.** However, Davis does not specifically teach that **a CoS (priority information) is based on a type of traffic; generating a PAUSE frame containing a value of the CoS.** Kloth from the same field of endeavor teaches that **a CoS (priority information) is based on a type of traffic** (see Abstract, Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. column 1 lines 45-67 and column 4 lines 40-67 indicates priority information is based on a type of traffic/service)**; generating a PAUSE frame containing a value of the CoS** (see Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. figure 1B element 24, column 1 lines 37-44)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Davis' flow control method with Kloth' flow control mechanism by implementing the priority information in the PAUSE frame. The motivation would have been that a QoS policy controlled

by a network system administrator is needed together with a mechanism for applying it at the full data rate of the data communications network (see Kloth, column 2 lines 49-52).

Still regarding Claim 15, Davies and Kloth teach all the limitations in claim 15 except that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS.** Lemyre from the same field of endeavor teaches that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS** (see Abstract, Column 4 Lines 44-52, Column 8 Lines 12-17 39-44, Column 9 Lines 1-25, Column 11 Lines 14-30, Column 12 Lines 4-6 e.g. each buffer partition is allocated based on a particular CoS). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the dynamic buffer allocation mechanism from Lemyre's invention to Davies' invention. The motivation would have been that it is desired to achieve a more efficient allocation whenever a buffer is not full (see Lemyre, column 4 lines 24-26).

Regarding Claim 16, Davies further teaches that **the switching control method, wherein the predetermined threshold value is necessary for determining a traffic congestion state** (see Paragraph [0027] [0031-0036] [0052-0053]).

Regarding Claim 17, Davies further teaches that **the switching control method, wherein the source node re-stops transmission of the Ethernet frame for a time included in the pause time information** (see [0002]).

8. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre) as applied to claim 1 above, and further in view of Chen et al U.S. Publication No 2003/0147347 (Chen).

Regarding Claim 5, Davies, Kloth and Lemyre teach all the limitations in claim 1 except that **the switching control method, further comprising the step of: when the size of data currently buffered in the data buffer is equal to or larger than the threshold value, setting a predetermined state flag indicative of a traffic congestion state.** Chen from the same field of endeavor teachs that **the switching control method, further comprising the step of: when the size of data currently buffered in the data buffer is equal to or larger than the threshold value, setting a predetermined state flag indicative of a traffic congestion state** (see Paragraph [0015-16] [0029]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of indicating different congestion states and allocate different share of buffer space for transmitting different data with from Chen's invention to Davies'. The rationale would have been that by doing so, the transmission rate of the high-speed traffic will not be significantly restricted by the low-speed traffic (or the congested one).

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre).

Regarding Claim 9, Davies, Kloth and Lemyre teach all the limitations in claim 1 except that **the switching control method, wherein a priority of the CoS associated with voice traffic is higher than that associated with data traffic.** Although Davis and Kloth do not specifically teach that the priority of the CoS associated with voice traffic is higher than that associated with the data traffic, it is a common practice in the art to associate the priority of the CoS with voice traffic or real time traffic higher than that associated with data traffic or non-real time traffic. At the time of the invention, it would have been obvious to a person ordinary skill in the art to associate the priority of the CoS with voice traffic higher than that associated with data traffic. The rationale would have been that delay of a communication comprising both the voice traffic and data traffic can be managed with better balance in term of delay.

10. Claims 10, 11, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth), Lin, U.S. Patent No. 6754179 (Lin) and Pope et al, GB Patent Application No. 2372679 (Pope) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre).

Regarding Claim 10, Davies et al teach that **a network switch for controlling traffic flow of an Ethernet frame which is received from at least one source node and is transmitted to at least one destination node, the switching control method** (see Abstract, Figures 1-4) **comprising steps of: transmitting the Ethernet frame to the destination node from a data buffer according to a class of service (CoS)** (see [0003] [0018] [0026-0027] [0031] i.e.

although Davies et al do not specifically discuss a set of CoS associated with the eight priority levels, with 802.1Q, the priority levels are often associated with a set of CoS or as the result of a set of CoS, namely a priority level represents a class of service as suggested in [0055] Line 6-7); **the data buffer buffering the Ethernet frame based on the CoS** (see [0003] [0026-0027] [0031-0036] [0045] [0055])**; comparing a size of data currently buffered in the data buffer with a predetermined threshold value** (see Figure 4, [0002] [0052-0053])**; when the size of data currently buffered in the data buffer is equal to or larger than the threshold value** (see [0002] [0010] [0052-0053])**, generating a PAUSE frame; and transmitting the PAUSE frame to the source node** (see [0010] [0019] [0027] [0031] [0035])**.** However, Davis does not specifically teach that **a CoS (priority information) is based on a type of traffic; generating a PAUSE frame containing a value of the CoS.** Kloth from the same field of endeavor teaches that **a CoS (priority information) is based on a type of traffic** (see Abstract, Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. column 1 lines 45-67 and column 4 lines 40-67 indicates priority information is based on a type of traffic/service)**; generating a PAUSE frame containing a value of the CoS** (see Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. figure 1B element 24, column 1 lines 37-44)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Davis' flow control method with Kloth' flow control mechanism by implementing the priority information in the PAUSE frame. The motivation would have been that a QoS policy controlled by a network system administrator is needed together with a mechanism for applying it at the full data rate of the data communications network (see Kloth, column 2 lines 49-52).

Still regarding Claim 10, Davies and Kloth do not teach that **the method, wherein when the size of data currently buffered in the data buffer is smaller than the threshold value, generating an UNPAUSE frame having a value of the CoS and information indicating termination of a PAUSE state; and transmitting the UNPAUSE frame to the source node.** Lin from the same field of endeavor teaches that **the method, wherein when the size of data currently buffered in the data buffer is smaller than the threshold value, generating an UNPAUSE frame having a value of the CoS and information indicating termination of a PAUSE state; and transmitting the UNPAUSE frame to the source node** (see Column 1 Line 55-67, Column 2 i.e. since an UNPAUSE frame is a PAUSE frame with pause time value of zero, a value of the CoS also presents). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

Still regarding Claim 10, Davies, Kloth and Lin teach all the limitations in claim 10 except that **the step of extracting a payload of the Ethernet frame and storing the payload of the Ethernet frame.** Pope et al from the same field of endeavor teaches that **the step of extracting a payload of the Ethernet frame and storing the payload of the Ethernet frame** (see Abstract, Figure 2). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of processing the header and payload of a data packet/frame separately from the invention of Pope into Davies'. The rationale would have

been that by separating the header from the payload and processing them separately reduces processing power when passing required information to the receiving end.

Still regarding Claim 10, Davies, Kloth, Lin and Pope teach all the limitations in claim 10 except that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS.** Lemyre from the same field of endeavor teaches that **wherein an amount of the data buffer is dynamically assigned according to the value of the CoS** (see Abstract, Column 4 Lines 44-52, Column 8 Lines 12-17 39-44, Column 9 Lines 1-25, Column 11 Lines 14-30, Column 12 Lines 4-6 e.g. each buffer partition is allocated based on a particular CoS)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the dynamic buffer allocation mechanism from Lemyre's invention to Davies' invention. The motivation would have been that it is desired to achieve a more efficient allocation whenever a buffer is not full (see Lemyre, column 4 lines 24-26).

Regarding Claim 11, Davies further teaches that **the switching control method, wherein the predetermined threshold value is necessary for determining a traffic congestion state** (see Paragraph [0027] [0031-0036] [0052-0053])**.**

Regarding Claim 12, Lin further teaches that **the switching control method, further comprising the step of: allowing the source node receiving the UNPAUSE frame to terminate the PAUSE state of traffic belonging to a CoS** (see Column 1 Line 55-67, Column 2)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art

to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

Regarding Claim 14, Lin further teaches that **the switching control method, wherein the information indicative of the termination of the PAUSE state is time information set as a zero pause time** (see Column 1 Line 55-67, Column 2 Line 1-3)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies), Kloth et al, U.S. Patent No. 6643260 (Kloth), Lin, U.S. Patent No. 6754179 (Lin), Pope et al, GB Patent Application No. 2372679 (Pope) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre) as applied to claim 10 above and further in view of Chen et al U.S. Publication No 2003/0147347 (Chen).

Regarding Claim 13, Davies, Kloth, Lin, Pope and Lemyre teach all the limitations in claim 10 except that **the method further comprising the step of: when the UNPAUSE frame is transmitted, setting predetermined flag information indicative of a traffic congestion state**

as a value of a traffic normal state. Chen et al from the same field of endeavor teach that **the method further comprising the step of: when the UNPAUSE frame is transmitted, setting predetermined flag information indicative of a traffic congestion state as a value of a traffic normal state** (see Paragraph [0015-0016] [0029]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to combine Chen's inventions to set the predetermined flag when an UNPAUSE frame is transmitted, which represents the traffic state is normal. The motivation would have been that by resuming paused transmission on demand such as according to congestion states of the system yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

12. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) and Kloth et al, U.S. Patent No. 6643260 (Kloth) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre) as applied to claim 15 above and further in view of Lin, U.S. Patent No 6754179.

Regarding Claim 18, Davies Kloth and Lemyre teach all the limitations in claim 15 except that **the switching control method, further comprising the step of: when the size of data currently buffered in the data buffer is smaller than the threshold value, generating an UNPAUSE frame in which the pause time for the CoS is set as "0" and transmitting the UNPAUSE frame to the input port coupled to the source node.** Lin from the same field of endeavor teach that **the switching control method, further comprising the step of: when the size of data currently buffered in the data buffer is smaller than the threshold value,**

generating an UNPAUSE frame in which the pause time for the CoS is set as "0" and transmitting the UNPAUSE frame to the input port coupled to the source node (see Column 1 Line 55-67, Column 2). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

Regarding Claim 19, Lin further teaches that **the switching control method, wherein the UNPAUSE frame is generated in the same data format as a data format of the PAUSE frame** (see Column 1 Line 55-67, Column 2). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

13. Claims 20, 21, 22, 25, 26, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth), Chen et al, U.S. Publication No. 2003/0147347 (Chen) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre).

Regarding Claim 20, Davis teaches that **a switching apparatus for controlling traffic flow of**

an Ethernet frame (see Abstract) **comprising: at least one input port for receiving the Ethernet frame from a source ode; at least one output port for transmitting the Ethernet frame to a destination node** (see Figures 1 and 2)**; a plurality of data buffers, each data buffer being classified based on a class of service (CoS) for classifying and storing Ethernet frames received through the at least one input port** (see [0003] [026-0027] [0031-0036] [0045] [0055])**; and a module for determining a traffic congestion states state on the basis of the reference information such as a threshold value, generating a PAUSE frame to stop traffic flow of a CoS corresponding to one data buffer of the plurality of data buffers when the one data buffer is in the traffic congestion state, and transmitting the PAUSE frame to the source node** (see Figure 4, [0019] [0026-0027] [0031-0036] [0052-0053])**.** However, Davis does not specifically teach that **a CoS (priority information) is based on a type of traffic; generating a PAUSE frame containing a value of the CoS.** Kloth from the same field of endeavor teaches that **a CoS (priority information) is based on a type of traffic** (see Abstract, Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. column 1 lines 45-67 and column 4 lines 40-67 indicates priority information is based on a type of traffic/service)**; generating a PAUSE frame containing a value of the CoS** (see Figure 1B, Column 1, Column 2 Lines 55-67, Column 3, Column 4 e.g. figure 1B element 24, column 1 lines 37-44)**.** At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Davis' flow control method with Kloth' flow control mechanism by implementing the priority information in the PAUSE frame. The motivation would have been that a QoS policy controlled by a network system administrator is needed together with a mechanism for applying it at the full data rate of the data communications network (see Kloth, column 2 lines

49-52).

Still regarding Claim 20, Davis and Kloth teach all the limitations in claim 20 except that **the apparatus comprising: a shared memory shared between the input and output ports; a plurality of sets of registers, each set of registers corresponding to one of the plurality of data buffers for registering reference information to be used based on CoS corresponding to the one of plurality of data buffers; and a switching main module for determining a traffic congestion states state on the basis of the reference information.** Chen from the same field of endeavor teaches that **the apparatus comprising: a shared memory shared between the input and output ports, the shared memory comprising a plurality of data buffers** (see Abstract, [0012] i.e. equal memory partition)**; a plurality of sets of registers, each set of registers corresponding to one of the plurality of data buffers for registering reference information to be used based on CoS corresponding to the one of plurality of data buffers; and a switching main module for determining a traffic congestion states state on the basis of the reference information** (see Figure 1, [0012-0016] [0023] [0029] [0037] i.e. although Chen discloses a single register, different partitions of the register storing plurality of information can be considered as a set of registers; it is up to the designer of the device how to implement the register: it is also apparent if multiple separate registers are used if, for instance, the cost of registers or size of the device is not a consideration;). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Chen's traffic control switching architecture with Davis' invention. The rationale would have been that Chen's architecture help utilize the resource of the device.

Still regarding Claim 20, Davies, Kloth and Chen teach all the limitations in claim 20 except that **wherein, for each data buffer of the plurality of data buffers, an amount of the data buffer is dynamically assigned according to the value of the CoS corresponding to the data buffer.** Lemyre from the same field of endeavor teaches that **wherein, for each data buffer of the plurality of data buffers, an amount of the data buffer is dynamically assigned according to the value of the CoS corresponding to the data buffer** (see Abstract, Column 4 Lines 44-52, Column 8 Lines 12-17 39-44, Column 9 Lines 1-25, Column 11 Lines 14-30, Column 12 Lines 4-6 e.g. each buffer partition is allocated based on a particular CoS). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the dynamic buffer allocation mechanism from Lemyre's invention to Davies' invention. The motivation would have been that it is desired to achieve a more efficient allocation whenever a buffer is not full (see Lemyre, column 4 lines 24-26).

Regarding Claim 21, Davies further teaches that **the switching apparatus, wherein the switching main module comprises: a switching logic for switching a transmission path of the Ethernet frame between the source node and the destination node** (see Paragraph [0049]); **and a memory manager for classifying and storing the Ethernet frame received through the input port, generating the PAUSE frame, and transmitting the generated PAUSE frame to the source node** (see Paragraph [0049] [0052]).

Regarding Claim 22, Davies further teaches that **the switching apparatus, wherein the PAUSE frame contains information of a predetermined pause time for which traffic transmission of the CoS is stopped** (see Paragraph [0002] [0054]).

Regarding Claim 25, Davies further teaches that **the switching apparatus, wherein the switching main module further re-generates a PAUSE frame corresponding to the CoS when a pause time has expired and the size of data currently buffered in the one data buffer is equal or larger than a threshold value** (see [0002]).

Regarding Claim 26, Chen further teaches that **the switching apparatus, wherein each set of the registers comprises: first register for registering physical size information of the one of the plurality of data buffers; second register for registering predetermined threshold values necessary for determining the traffic congestion state of the one of the plurality of data buffers; third register for registering size information of data currently buffered in the one of the plurality of data buffers; and fourth register for registering predetermined state flags indicative of the traffic congestion states state of the one of the plurality of data buffers, wherein the information registered in the first to fourth registers is used as the reference information** (see Figure 1, [0012-0016] [0023] [0029] [0037] i.e. in order to determine the congestion state of the data buffer(s) using the threshold value, values such as buffer size, current buffer size, threshold must be stored so the comparison can be performed and the result, namely state flag, must also be stored). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Chen's traffic control switching

architecture with Davis' invention. The rationale would have been that Chen's architecture help utilize the resource of the device.

Regarding Claim 27, Chen further teaches that **the switching apparatus, wherein the reference information comprises: buffer size information indicative of maximum physical storage capacity of the one of the plurality of data buffers; predetermined threshold information indicative of threshold storage capacity of the one of the plurality of data buffers necessary for determining the traffic congestion states based on the CoS; current data amount information indicative of amount of data currently buffered in the one of the plurality of data buffers based on the CoS; and state flag for setting the traffic congestion states state based on the CoS** (see Figure 1, [0012-0016] [0023] [0029] [0037] i.e. in order to determine the congestion state of the data buffer(s) using the threshold value, values such as buffer size, current buffer size, threshold must be stored so the comparison can be performed and the result, namely state flag, must also be stored). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Chen's traffic control switching architecture with Davis' invention. The rationale would have been that Chen's architecture help utilize the resource of the device.

Regarding Claim 28, Davies further teaches that **The switching apparatus as set forth in claim 27, wherein the switching main module determines that the one data buffer is in the traffic congestion state when an amount of data currently buffered in the one data buffer based on the CoS is equal to or more than a threshold value** (see Abstract, [0052-0053]).

14. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al, U.S. Publication No. 2003/0185249 (Davies) in view of Kloth et al, U.S. Patent No. 6643260 (Kloth), Chen et al, U.S. Publication No. 2003/0147347 (Chen) and Lemyre et al, U.S. Patent No. 6717912 (Lemyre) as applied to claim 20 above and further in view of Lin, U.S. Patent No. 6754179 (Lin).

Regarding Claim 23, Davies, Kloth, Chen and Lemyre teach all the limitations in claim 20 except that **the switching apparatus, wherein the switching main module further generates a UNPAUSE frame to resume traffic flow of the CoS when it is determined that the traffic congestion state in the one data buffer is switched to a normal state on the basis of the reference information, and transmits the generated UNPAUSE flame to the input port coupled to the source node.** Lin from the same field of endeavor teach that **the switching apparatus, wherein the switching main module further generates a UNPAUSE frame to resume traffic flow of the CoS when it is determined that the traffic congestion state in the one data buffer is switched to a normal state on the basis of the reference information, and transmits the generated UNPAUSE flame to the input port coupled to the source node** (see Column 1 Line 55-67, Column 2). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

Regarding Claim 24, Davies, Kloth, Chen and Lemyre teach all the limitations in claim 20 except that the switching apparatus, wherein the switching main module further generates a UNPAUSE frame corresponding to the CoS when a pause time has expired and the size of data currently buffered in the one data buffer is smaller than a threshold value. Lin from the same field of endeavor teach that the switching apparatus, wherein the switching main module further generates a UNPAUSE frame corresponding to the CoS when a pause time has expired and the size of data currently buffered in the one data buffer is smaller than a threshold value (see Column 1 Line 55-67, Column 2). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of UNPAUSE frame to resume the data transmission as described in Davies' invention. The motivation would have been that by resuming paused transmission on demand yields better transmission performance since no time is wasted for waiting the preset pause time to reach zero.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Referring to the PTO Form 892, references are cited to show similar method and system of dynamically change a buffer size.

16. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WEI-PO KAO whose telephone number is (571)270-3128. The examiner can normally be reached on Monday through Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/

Supervisory Patent Examiner, Art Unit 2416

/Wei-po Kao/

Examiner, Art Unit 2416